IN THE CLAIMS:

Please AMEND the claims and ADD a new claim as follows:

1. (CURRENTLY AMENDED) A method of providing a multi-wavelength light source, comprising:

modulating an optical pulse source so as to output optical pulses with a designated repetition frequency f_o;

time-division multiplexing the optical pulses output by said optical pulse source by branching the optical pulses output by said optical pulse source to N paths and multiplexing the branched optical pulses so as to output optical pulses with a repetition frequency which is an integral multiple of said designated repetition frequency f_o, wherein a time difference among the respective paths is $1/(N*(f_o))$, and so that intensities and polarization states of the branched optical pulses are equal after being multiplexed; and

demultiplexing wavelengths of the optical pulses with the repetition frequency which is the integral multiple of said designated repetition frequency so as to output said wavelengths as the multi-wavelength light source.

2. (CURRENTLY AMENDED) An apparatus for providing a multi-wavelength light source, comprising:

an optical pulse source which is modulated so as to output optical pulses with a designated repetition frequency f_o;

a time-division multiplexing unit which branches the optical pulses output by said optical pulse source to N paths and multiplexes the branched optical pulses so as to output optical pulses with a repetition frequency which is an integral multiple of said designated repetition frequency f_o, wherein a time difference among the respective paths is $1/(N*(f_o))$, and so that intensities and polarization states of the branched optical pulses are equal after being multiplexed; and

a wavelength demultiplexing unit which demultiplexes wavelengths of the optical pulses with the repetition frequency which is the integral multiple of said designated repetition frequency so as to output said wavelengths as the multi-wavelength light source.

3. (ORIGINAL) The apparatus for providing a multi-wavelength light source as claimed in claim 2, wherein said time-division multiplexing unit is a Mach-Zehnder-interferometer-type time-division multiplexing apparatus.

4. (ORIGINAL) The apparatus for providing a multi-wavelength light source as claimed in claim 2, wherein said time-division multiplexing unit is a Michelson-interferometer-type time-division multiplexing apparatus.

5. (ORIGINAL) The apparatus for providing a multi-wavelength light source as claimed in claim 2, wherein said time-division multiplexing unit time-division multiplexes said optical pulses using a plurality of optical waveguides with different optical path lengths which are arranged in a planar lightwave circuit.

6. (PREVIOUSLY PRESENTED) The apparatus for providing a multi-wavelength light source as claimed in claim 5, wherein said wavelength demultiplexing unit is a wavelength demultiplexer having a multi-peak structure with a center transmission frequency spacing which is the integral multiple of said designated repetition frequency.

7. (ORIGINAL) The apparatus for providing a multi-wavelength light source as claimed in claim 6, wherein said wavelength demultiplexer is an arrayed waveguide grating filter.

8. (ORIGINAL) The apparatus for providing a multi-wavelength light source as claimed in claim 7, wherein said planar lightwave circuit and said arrayed waveguide grating filter are provided on one board.

9. (ORIGINAL) The apparatus for providing a multi-wavelength light source as claimed in claim 2, further comprising a spectrum-broadening unit which broadens spectrum of the optical pulses which are received at said time-division multiplexing unit, said spreading effected by a non-linear medium having a third-order non-linear effect.

10. (CURRENTLY AMENDED) A method comprising:

branching optical pulses with a designated repetition frequency f_o to N paths;

multiplexing the branched optical pulses so as produce optical pulses with a repetition frequency which is an integral multiple of the designated repetition frequency f_o, wherein a time difference among the respective paths is $1/(N^*(f_o))$, and so that intensities and polarization states of the branched optical pulses are equal after being multiplexed;

demultiplexing wavelengths of the produced optical pulses; and

outputting the demultiplexed wavelengths as a multi-wavelength light source.

11. (CURRENTLY AMENDED) An apparatus comprising:

means for branching optical pulses with a designated repetition frequency f_o to N paths;

means for multiplexing the branched optical pulses so as produce optical pulses with a repetition frequency which is an integral multiple of the designated repetition frequency f_o, wherein a time difference among the respective paths is $1/(N*(f_o))$, and so that intensities and polarization states of the branched optical pulses are equal after being multiplexed;

means for demultiplexing wavelengths of the produced optical pulses; and

means for outputting the demultiplexed wavelengths as a multi-wavelength light source.

12. (NEW) An apparatus as in claim 2, further comprising a polarization controller through which the optical pulses output by said optical pulse source pass, and a variable optical attenuator and a variable optical delay unit arranged in each path, so that the intensities and the polarization states of the branched optical pulses are equal after being multiplexed.